

REMARKS

By virtue of the above amendment, the specification and claim 1 have been amended. Accordingly, claims 1-8 are pending and under consideration, claim 1 being an independent claim. Applicants thank the Examiner for indicating that claims 3-6 contain allowable subject matter.

In view of the above-mentioned amendment to the claims, it is submitted that the Examiner's rejections under 35 U.S.C. §§ 112 and 102 have been overcome. As herein amended, it is submitted that pending claims 1-8 in the present application are now both allowable and in condition for allowance, and an action to such effect is earnestly requested at the Examiner's earliest convenience.

Matters for the Examiner's Attention

Applicants respectfully request that the Examiner indicate whether the drawings as filed have been accepted.

Supplemental Information Disclosure Statements have been filed in an effort to provide the Examiner with documents cited by other Examiners in related applications. Related applications are identified in the Supplemental Information Disclosure Statements filed herewith, or were identified in the initial March 8, 2002, Information Disclosure Statement.

The Examiner is requested to review the status of related cases when acting upon Applicants' reply, including those applications from which Applicants have provided the cited art (as well as those for which Applicants have not yet received a first Official Action, i.e., U.S. Patent Application Nos. 09/961,233; and 10/101,618).

Explanation of Reason for Claim Amendments

The reason for the present amendments to claims 1 is to more clearly associate the claim language with the broad language employed in the specification. The amendments broaden the claims. Accordingly, Applicants submit that no subject matter has been disclaimed. Similarly, Applicants do not intend to surrender any equivalents by clarification of the terms of claim 1.

Rejections under 35 U.S.C. § 112

Applicants would like to inform the Examiner that the present application is one of a family of applications (related applications being incorporated by reference on the first page of the application).

Disclosure of the overall structure of an embodiment of a zoom lens incorporating many inventions, including that of the present application, tends to be toward the beginning of the specification (with some exceptions); disclosure that emphasizes the invention claimed in the present application tends to be toward the end of the specification (with some exceptions). Some of the disclosure that emphasizes the invention claimed in the present application begins on page 75.

The specification includes many express definitions of claim terms (*e.g.*, especially pages 75 et seq.). The following sentences are illustrative (emphasis added for the purpose of showing terms corresponding to the claim language only):

"The shift leading surfaces 53c formed on the first sub-lens group frame 53 and the follower projections 54a formed on the second sub-lens group frame 54 together form a shift cam mechanism (of a lens group (*lens frame*) *shift mechanism*) that enables the lens-group frames 53 and 54 either be at a mutually close position, or be at a mutually distant position." (p.55)

"The lugs 54e of the second sub-lens group frame 54 and the control recesses 55a constitute a focusing cam mechanism (*linear displacement mechanism*) of a focusing mechanism." (p.59)

"In other words, the guide bores 53b, together with the guide rods 59, form a guide mechanism (i.e., *a first linear guide mechanism*) for guiding the first sub-lens group frame 53 linearly." (p.76)

"In other words, the guide projections 54d, together with the wide-angle linear guide slots 51d and the telephoto linear guide slots 51f, form a guide mechanism (i.e., *a second linear guide mechanism*) for guiding the second sub-lens group frame 54 linearly." (p.76)

"In the present invention, a *guide clearance* C2 (i.e., a fitting clearance C2) of the linear guide mechanism for the first sub-lens group frame 53 (see Figure 26) is formed to be larger than a *guide clearance* C1 (i.e., a fitting clearance C1) of the linear guide mechanism for the second sub-lens group frame 54 (see Figure 28). In other words, the *guide clearance* of the linear guide element for the first sub-lens group frame 53, which is prevented from rotating, is set to be larger than the *guide clearance* of the linear guide element for linearly guiding the second sub-lens group frame 54 at the extremities of its rotation over a predetermined angle."¹ (p.77)

The remaining elements of claim 1 are also explicitly defined in word-for-word terms, e.g., "first sub-lens group frame 53"; "second sub-lens group frame 54"; "first sub-lens group S1"; "second sub-lens group S2", "front shutter retaining ring (*support frame*) 51".

¹ Claim 1 has been amended to recite "guide clearance[s]" rather than "linear guide clearance[s]" for perfect one-to-one correspondence of language of the specification and claims, although such is not required under 35 U.S.C. § 112.

Accordingly, all of the language of claim 1 is supported by a specific description of a corresponding element of the embodiment(s) using essentially identical language. This kind of correspondence is also generally found between the terms of the remaining claims and the specification.

Furthermore, all of the pending claims are original claims, and are therefore deserving of the treatment set forth in Office guidelines for original claims. Still further, notwithstanding specific descriptions of the embodiment(s) using essentially identical language to all of the claim language, the claim language is also defined in the body of the specification as filed, in the Summary section.

For these reasons, Applicants request that the Examiner reconsider and withdraw all rejections under 35 U.S.C. § 112, first and second paragraphs.

At the same time, Applicants stress that the description is merely illustrative, and that the plain and ordinary meaning of the claim language would be clear to one of ordinary skill in the art even without recourse to the detailed disclosure of the embodiments. No estoppel or disclaimer should attach to any remarks herein, as they are merely intended to direct the Examiner's attention to the existing original disclosure. Similarly, Applicants' remarks herein should not be construed as placing any particular emphasis on any intended interpretation.

Rejections under 35 U.S.C. § 102

The Examiner rejected claim 1, 2, 7, and 8 under 35 U.S.C. § 102(a), as being anticipated by TAKASHI et al. (JP 2000-275518); and under 35 U.S.C. § 102(a) as being anticipated by SATO et al. (6,512,638).

Applicants note that the Examiner has not specifically addressed the recited feature of claim 1 "wherein a guide clearance of said first linear guide mechanism is larger than a guide clearance of said second linear guide mechanism", which relates strongly to the overall

invention of the present application, and Applicants note that they have not been able to locate any disclosure in either applied reference that relates to the invention in any way.

Again, the Examiner's attention is directed to page 75 et seq., and in particular Figs. 24-28 of the present specification. Applicants stress that the following is an explanation of a complex embodiment in order to permit better understanding of the invention, and not a rephrasing of the invention (which is stated in the claim language). In the structure of the embodiment, sub-lens frames can move both relative to one another in the optical axis direction (during switching) and integrally together in the optical axis (OA) direction (during focusing) .

To briefly explain the diagrams (reference should be made to Figs. 24-28 and the specification for a complete description), when the first and second frames 53, 54 are to be moved relatively during switching, the second frame 54 is rotated without moving in the OA direction by the actuator ring 55 (via pins 54e). The first frame 53 is pushed in the OA direction by the second frame 54 (via pins 54a), and is kept from rotating (guided) by the rods 59.

If this were the only movement, only one linear guiding mechanism would be necessary. However, because the second frame 54 must also be prevented from rotating and move with the first frame 53 during focusing, the second frame must also be subject to linear guiding at some point.

Accordingly, when the first and second frames 53, 54 are to be moved together during focusing, the second frame 54 is driven in the OA direction by the actuator ring 55 (via pins 54e) and is kept from rotating (guided) within the slots 51d or 51f. At the same time, the first frame 53 is pushed in the OA direction by the second frame 54 (via pins 54a) - however, the first frame 53 is still kept from rotating (guided) by the rods 59.

Accordingly, two linear guiding mechanisms are needed: one to keep the first frame

53 from rotating while the second frame 54 rotates and moves the first frame 53; and another to keep the second frame 54 itself from rotating while the actuator ring 55 rotates and moves the second frame 54 (and the first frame as well) in the OA direction. During focusing, both of these are mechanically active.

If the clearances are essentially the same, there is a potential mechanical problem. When the clearances are essentially the same, during focusing, random error in the size and alignment of the clearances would control which is the operative guide. The integral unit could shift between one guide to the other at different places along the movement, which could lead to, e.g., chatter, noise, inaccuracy, improper wear, etc., as detailed in the specification. Some conflicts of guide alignment and clearance size could lead to e.g., skipping, binding, interference, etc., as detailed in the specification.

In an embodiment of the present invention, the guide clearance of the first sub-lens group frame is set to be larger (i.e., looser) than the guide clearance of the second sub-lens group frame. Accordingly, the guiding mechanism is always the same (the smaller-clearance guide), interference between the two linear guide mechanisms is avoided, and smooth integral movement is ensured.

Neither the problem nor the solution arise with conventional mechanisms, because conventional mechanisms do not encounter a situation where two different linear guiding mechanisms may potentially conflict. Generally, conventional mechanisms only use one linear guiding mechanism at a time.

None of the applied references teaches or suggests the combined limitations of claim 1, including, but not limited, to a structure wherein a guide clearance of a first linear guide mechanism (having the detailed structure and relationship to other elements as recited) is larger than a guide clearance of a second linear guide mechanism (having the detailed structure and relationship to other elements as recited).

Accordingly, for at least the above reasons, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claim 1 under 35 U.S.C. § 102(a).

Applicants further submit that claims 2, 7, and 8, which depend either directly or indirectly from claim 1, are allowable over the references of record for the above reasons, and at least for the reason that each depends from an allowable base claim and because each recites additional features to further define Applicants' invention. These claims also define features not found in the art of record.

For example, claim 2 recites a structure that takes into account that in practice, the focusing operation takes place before (during) shutter release - which means that the smaller-clearance linear guiding mechanism is the one used during actual exposure, when accuracy is more important. No shutter release takes place during a switching operation, so the larger clearance does not adversely affect photography. Claim 7 and 8 recites an actuator ring that is rotated to cause said lens frame shift mechanism and said linear displacement mechanism to operate, and structural details thereof - and the prior art does not show an actuator ring with such dual functionality.

Accordingly, for at least the above reasons, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 1, 2, 7, and 8 under 35 U.S.C. § 102(a).

SUMMARY AND CONCLUSION

In view of the fact that none of the art of record, whether considered alone or in combination, discloses or suggests the present invention as now defined by the pending claims, and in further view of the above amendments and remarks, reconsideration of the Examiner's action and allowance of all the pending claims in the present application are respectfully requested and are believed to be appropriate.

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The amendments to the claims which have been made in this reply should not be considered to be narrowing, but only to clarify existing recitations, and no estoppel should be deemed to attach thereto. No equivalents are considered to have been disclaimed.

If there should be any questions concerning this application, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,
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